

IDENTIFICATION

PRODUCT CODE:	MAINDEC-Ø8-DHMC-A-D
	REPLACES: MAINDEC-8E-DLHB-D
PRODUCT NAME:	PDP8-E MEMORY EXTENSION AND TIME SHARE CONTROL TEST
DATE CREATED:	JUNE 16, 1972
MAINTAINER:	DIAGNOSTIC PROGRAMMING GROUP
AUTHOR:	J. VROBEL

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1:

ABSTRACT

THIS PROGRAM TESTS THE MEMORY EXTENSION AND TIME SHARE CONTROL LOGIC FOR PROPER OPERATION. THE PROGRAM EXERCISES AND TESTS ALL JOY'S ASSOCIATED WITH MEMORY EXTENSION AND TIME SHARE CONTROL.

ERRORS ENCOUNTERED DURING RUNNING WILL RESULT IN A PROGRAM "HALT" OR A "JUMP TO SELF", WHICH MAY OCCUR IN ANY FIELD DEPENDING ON THE PORTION OF THE TEST EXECUTED. ERRORS MAY BE IDENTIFIED BY REFERENCING THE PROGRAM LISTING.

2:

REQUIREMENTS

2.1

EQUIPMENT

PDP8-E COMPUTER WITH THE KM8-E OPTION INSTALLED AND AT LEAST 4K OF EXTENDED MEMORY.

2.2

STORAGE

THE PROGRAM REQUIRES 4200(8) LOCATIONS OF CORE MEMORY AND MUST RESIDE IN FIELD 0 ONLY.

2.3

PRELIMINARY PROGRAMS

ALL THE PROGRAMS FOR THE BASIC PDP8-E MUST HAVE BEEN RUN SUCCESSFULLY.

3:

LOADING PROCEDURE

3.1

METHOD

THE PROGRAM IS LOADED INTO "FIELD 0" USING THE STANDARD BINARY LOADER TECHNIQUE.

4:

STARTING PROCEDURE

4.1

CONTROL SWITCH SETTINGS

SR 9, 10, AND 11 MUST CONTAIN AN OCTAL VALUE EQUAL TO THE NUMBER OF EXTENDED FIELDS AVAILABLE. NOTE THAT FIELD 0 IS NOT INCLUDED.

SR0=0 WILL RESULT IN COMPLETE PROGRAM EXECUTION OF THE MEMORY

EXTENSION AND TIME SHARE CONTROL.

SR0=1 WILL LOOP THE PROGRAM ON THE MEMORY EXTENSION PORTION AND TEST THAT THE TIME SHARE IS DISABLED.

SR1=1 WILL RESULT IN AN END OF TEST HALT AT LOCATION 1565(8).

4,2

STARTING ADDRESS

THE STARTING ADDRESS IS LOCATION 0200(8).

4,3

OPERATOR ACTION

4,3,1

MEMORY EXTENSION AND TIME SHARE CONTROL (TIME SHARE ENABLED)

WITH THE PROGRAM IN MEMORY, SET THE SWITCH REGISTER TO 0000.

PRESS EXTENDED ADDRESS LOAD.

SET THE REGISTER TO 0200 OCTAL.

PRESS ADDRESS LOAD.

PLACE THE OCTAL VALUE OF EXTENDED FIELDS AVAILABLE IN SR9=11.

PRESS CLEAR AND THEN CONTINUE.

THE PROGRAM SHOULD RUN UNTIL A FAILURE OCCURS OR UNTIL STOPPED BY THE OPERATOR WITH SR1=1. NOTE THAT THE PROGRAM SHOULD ALWAYS BE STOPPED WITH SR1=1.

THE TTY BELL WILL SIGNAL A SUCCESSFUL TEST AT THE COMPLETION OF EVERY PASS.

4,3,2

MEMORY EXTENSION PORTION (TIME SHARE DISABLED)

WITH THE PROGRAM IN MEMORY, SET THE SWITCH REGISTER TO 0000.

PRESS EXTENDED ADDRESS LOAD.

SET THE SWITCH REGISTER TO 0200 OCTAL.

PRESS ADDRESS LOAD.

PLACE THE OCTAL VALUE OF EXTENDED FIELDS AVAILABLE IN SR9=11.

PLACE SR0=1 TO EXECUTE MEMORY EXTENSION ONLY.

PRESS CLEAR AND THEN CONTINUE.

THE PROGRAM SHOULD HALT AT LOCATION 3651(8). THIS WILL

/PDP8-E, MEMORY EXTENSION AND TIME SHARE CONTROL TEST;
 /COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS;
 /STARTING ADDRESS IS 0200.
 /CONSTANTS
 /

6201 COP=0201
 6202 CIP=0202
 6214 ROP=0214
 6224 RIP=0224
 6244 RMP=0244
 6234 RIB=0234
 6274 SUP=0274
 6264 CUF=0264
 6254 SINT=0254
 6204 CINT=0204
 6007 CAP=0007
 6003 RYP=0003
 6004 GYP=0004
 6001 ION=0001
 6002 IOP=0002
 6000 SKON=0000
 6003 SRQ=0003
 6040 SPF=0040
 6041 TSP=0041
 6032 KCC=0032
 6002 IOP=0002
 6036 KRB=0036
 6000 IOT=0000
 7421 MQL=7421

0000
 0000
 0001
 0002
 0003
 0020
 5400
 0021
 0022
 0023
 0024
 0025
 0026
 0027
 0030
 0031
 0032
 0033
 0034
 0035
 JMP I 0
 ISE 0
 TFLG
 NSTKS
 TRMF
 TRANS
 TAUTO
 LOOP 0
 NDF 0
 STKS 0
 DAY 0
 NOSTAK 0
 NOFLD 0
 KCAIN 0
 CAL=1

0036	1133	KCAI,	CAI
0037	7402	KHLT,	HLY
0040	6201	KCDF,	6201
0041	6202	KCIF,	6202
0042	1316	XFD,	EXFD
0043	0001	K1,	1
0044	0007	K7,	7
0045	2010	K10,	10
0046	7777	K777,	7777
0047	7000	K700,	7000
0050	7707	K770,	7707
0051	7767	K776,	7767
0052	7757	K775,	7757
0053	7747	K774,	7747
0054	7737	K773,	7737
0055	7727	K772,	7727
0056	7717	K771,	7717
0057	7776	K777,	7776
0060	7775	K777,	7775
0061	7774	K777,	7774
0062	7773	K777,	7773
0063	7772	K777,	7772
0064	7771	K777,	7771
0065	0067	POINT,	1, +2
0066	0067	K7S,	1, +1
0067	7766	K776,	7766
0070	7755		7755
0071	7744	K774,	7744
0072	7733		7733
0073	7722		7722
0074	7711		7711
0075	7700		7700
0076	1127	X7DF,	STDF
0077	1130	X7DF1,	STDF+1
0100	1302	KXFLD,	EXFLD
0101	5402	KJMP,	JMP I 2
0102	1200	KNTR,	ENTER
0103	0020	K20,	20
0104	5505	JMP2,	JMP I KFLD0
0105	1427	KFLD0,	RTN
0106	1422	KRTN,	CAG+2
0107	1400	XFIB,	SFIB
0110	7770	K777,	7770
0111	0070	K007,	0070
0112	0000	XSAV,	0000
0113	7770	XCOUNT,	7770
0114	0000	XTOR,	0000
0115	5200	K520,	5200
0116	1200	K120,	1200
0117	0077	K007,	0077
0120	0011	K001,	0011
0121	7700	K770,	7700
0122	0002	K000,	0002

0123	0004	K0004,	0004
0124	7402	K7402,	7402
0125	6000	K6000,	6000
0126	0100	K0100,	0100
0127	0203	PLACE,	BEGIN
0130	1000	K1000,	1000
0131	2000	TIME,	T1
0132	0017	K0017,	0017
0133	6001	K6001,	6001
0134	5535	JMPIR,	JMP I XRET
0135	2511	XRET,	RET
0136	0000	XDATA,	0000
0137	0000	K0000,	0000
0140	0003	K0003,	0003
0141	0001	K0001,	0001
0142	1100	K1100,	1100
0143	7745	SRGO,	7745
0144	3577	K3577,	3577
0145	7745	K7745,	7745
0146	3633	XXSR0,	XXSR0
0147	1556	XELL,	BELL+1
0150	1555	XELL,	BELL
0151	0046	T18,	TLS
0152	3643	XTRAP,	TRAP
0153	2531	ATRAP,	JMP I TIME
0154	0000	PC0,	0000
0155	2047	XDATA,	DATER
0156	6211	KCDF1,	COP 10
0157	2525	KDATER,	2525

/TEST 00
/TEST CDF AND ROF, USE CDF TO SET THE DATA
/FIELD AND ROF TO READ THE DATA FIELD.
/DO ALL COMBINATIONS 0 TO 7,
/
*200
/
BEGIN1, LA3
JMP I XTRAP
CLA CLC
CAP
CUP
TAD KHLT
DCA 1
ION
CDF 00
ROF
SNA DFY
JMP DFY
HLT

0200	0200		
0200	7604	BEGIN1, LA3	
0201	7510	SPA	
0202	5552	JMP I XTRAP	
0203	7300	CLA CLC	
0204	6007	CAP	
0205	6264	CUP	
0206	1037	TAD KHLT	
0207	3001	DCA 1	
0210	6001	ION	
0211	6201	CDF 00	/STORE A HLT IN LOC 1 AND
0212	6214	ROF	/CHECK FOR STRAY INTERRUPT ROST;
0213	7450	SNA DFY	/DF 0
0214	5220	JMP DFY	/SHOULD NOT SKIP
0215	7402	HLT	/ERROR; CDF OR ROF FAILED


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/DF4,
0274 1054      TAD K7737      /7737
0275 6241      CDF 40        /DF 4
0276 6214      RDF          /AC=0
0277 7040      CMA          /CDF 4 OR RDF FAILED
0300 7450      SNA          /DONE IF SKP
0301 5305      JMP OK3
0302 7402      HLT
0303 7200      CLA
0304 5274      JMP DF4
/OK3,
0305 2027      ISZ LOOP
0306 5263      JMP DFS
/
0307 7200      CLA
0310 3027      DCA LOOP
/
/DF5,
0311 1055      TAD K7727      /7727
0312 6251      CDF 50        /DF5
0313 6214      RDF          /AC=0
0314 7040      CMA          /CDF 5 OR RDF FAILED
0315 7450      SNA
0316 5322      JMP DF4
0317 7402      HLT
0320 7200      CLA
0321 5311      JMP DFS
/
/DF6,
0322 1056      TAD K7717      /7717
0323 6261      CDF 60        /DF 6
0324 6214      RDF          /AC=0
0325 7040      CMA
0326 7450      SNA
0327 5333      JMP OK4
/OK4,
0330 7402      HLT
0331 7200      CLA
0332 5322      JMP DF6
/
/OK4,
0333 2027      ISZ LOOP
0334 5311      JMP DF5
0335 6000      SKON
0336 7402      HLT
/TEST 01
/NOV TEST INTERRUPT BUFFER (IB) BITS 9-11 WITH
/RIB: PI IS ENABLED: TELEPRINTER FLAG IS
/USED FOR INTERRUPT: DO ALL COMBINATIONS 0 TO 7.
/
0337 6201      CDF 00
0340 1020      TAD JMP10
0341 3001      DCA 1
0342 3027      DCA LOOP
0343 6041      TSF
0344 4422      JMS 1 XTFLG
/SET FLAG

```

0345	6001	1B0,	ION	/ENABLE PI
0346	7200		CLA	
0347	6234		RIB	/READ SF
0350	7450		SNA	
0351	5354		JMP 1B1	/RIB FAILED
0352	7402		HLT	
0353	5345		JMP 1B0	
/				
0354	6211	1B1,	CDF 10	/DF 1
0355	6001		ION	
0356	7200		CLA	/DF SHOULD BE 0 AFTER A PI
0357	6214		RDF	
0360	7450		SNA	
0361	5364		JMP i+3	
0362	7402		HLT	/DF NOT CLEARED, OR NO PI
0363	5354		JMP 1B1	
/				
0364	1057		TAD K7776	
0365	6234		RIB	/READ SF
0366	7040		CMA	/AC=0
0367	7450		SNA	
0370	5373		JMP 0K5	
0371	7402		HLT	/RIB OR SF FAILED
0372	5354		JMP 1B1	/DONE IF SKP
0373	2027	0K5,	ISZ LOOP	
0374	5345		JMP 1B0	
0375	5776		JMP i'+1	
0376	0400		1B2=2	
*400				
0400	7200		CLA	
0401	3027		DCA LOOP	
/				
0402	6221	1B2,	CDF 20	/DF 2
0403	6001		ION	
0404	7200		CLA	/SHOULD BE 0 AFTER PI
0405	6214		RDF	
0406	7450		SNA	
0407	5212		JMP i+3	/DF NOT CLEARED, OR NO PI
0410	7402		HLT	
0411	5202		JMP 1B2	
/				
0412	1060		TAD K7775	
0413	6234		RIB	/AC=7777
0414	7040		CMA	/=0
0415	7450		SNA	
0416	5221		JMP 1B3	/RIB OR SF FAILED
0417	7402		HLT	
0420	5202		JMP 1B2	
/				
0421	6231	1B3,	CDF 30	/DF3
0422	6001		ION	
0423	7200		CLA	/DF SHOULD BE CLEARED
0424	6214		RDF	

0425	7450	SNA			
0426	5231	JMP I+3		/DF NOT CLEARED	
0427	7402	HLT			
0430	5221	JMP I83			
/					
0431	1061	TAD K7774		/AC=7777	
0432	6234	RIB		/AC=0	
0433	7040	CMA			
0434	7450	SNA		/RIB OR SF FAILED	
0435	5240	JMP OK6			
0436	7402	HLT		/DONE IF SKP	
0437	5221	JMP I83			
/					
0440	2027	ISZ LOOP	OK6		
0441	5202	JMP I82			
/					
0442	7200	CLA			
0443	3027	DCA LOOP			
/					
0444	6241	COF 40	I84	/DF 3	
0445	6001	ION			
0446	7200	CLA		/DF MUST BE 000 AFTER A PI	
0447	6214	RDF		/ERROR IF SKIP	
0450	7450	SNA			
0451	5254	JMP I+8			
/					
0452	7402	HLT		/DF NOT 0 AFTER PI	
0453	5244	JMP I84			
/					
0454	1062	TAD K7773		/AC=7773	
0455	6234	RIB		/AC=7777	
0456	7040	CMA		/AC=0	
0457	7450	SNA		/RIB OR SF FAILED	
0460	5263	JMP I85			
0461	7402	HLT			
0462	5244	JMP I84			
/					
0463	6251	COF 50	I85	/DF 5	
0464	6001	ION			
0465	7200	CLA		/DF SHOULD=000	
0466	6214	RDF			
0467	7450	SNA		/DF NOT 0 AFTER PI	
0470	5273	JMP I+3			
0471	7402	HLT			
0472	5263	JMP I85			
/					
0473	1063	TAD K7772		/AC = 7772	
0474	6234	RIB		/AC = 7777	
0475	7040	CMA		/AC = 0000	
0476	7450	SNA		/RIB OR SF FAILED	
0477	5302	JMP OK7			
0500	7402	HLT			
0501	5263	JMP I85			

0502 2027 0K7, /DONE IF 0 AND SKIP

0503 5244 JMP 1B4

0504 7200 CLA
0505 3027 DCA LOOP

0506 6261 /DF6

0507 6001 CDF 60

0510 7200 CLA
0511 6214 RUF
0512 7450 SNA

0513 5316 JMP 1+3

0514 7402 HLT

0515 5306 JMP 1B6

0516 1064 /7771
0517 6234 /AC=7777

0520 7040 TAD K7771

0521 7450 RIB

0522 5325 CMA

0523 7402 SNA

0524 5306 JMP 1B7

0525 6271 HLT

0526 6001 JMP 1B6

0527 7200 /DF 7

0530 6214 CDF 70

0531 7450 ION

0532 5335 CLA

0533 7402 RUF

0534 5325 SNA

0535 1110 JMP 1+3

0536 6234 HLT

0537 7040 /DF NOT 0

0538 5344 JMP 1B7

0539 7402 TAD K7770

0540 5325 RIB

0541 5344 CMA

0542 7402 SNA

0543 5325 JMP 0K8

0544 2027 HLT

0545 5306 JMP 1B7

0546 5747 /DONE IF \$KP

0547 0600 JMP 1+1

0600

0600

TEST 02
/NOW TEST DCA 1 AND TAD 1 TO ALL STACKS, NUMBER OF
/EXTENDED STACKS SHOULD BE IN SR9 TO 11, EACH STACK WILL
/CONTAIN ITS DF# IN LOCATION 7000.

0600 3027 DCA LOOP

0601	4423	DCAL,	JMS I XSTKS	/READ SR 9=11
0602	7001		IAC	
0603	3030		DCA NDF	/DF NUMBER 1 TO START
0604	1040		TAD KCBF	/6201
0605	1045		TAD K10	
0606	3207		DCA I+1	/DF 001 TO START WITH
0607	6201		CDF 00	/WILL BE INCREMENTED
0610	1030	DFLD,	TAD NDF	/DF#
0611	3447		DCA I K7000	/PUT IN 7000 OF STACK
0612	2031		ISZ STKS	/ALL STACKS WHEN 0
0613	7410		SKP	
0614	5222		JMP TAD I	/TEST TAD I
0615	1045		TAD K10	
0616	1207		TAD DFLO	/INCR, CDF 10Y
0617	3207		DCA DFLO	
0620	2030		ISZ NDF	
0621	5207		JMP DFLO	
0622	4423	/TAD,	JMS I XSTKS	/SR9=11 AGAIN
0623	7001		IAC	
0624	3030		DCA NDF	/DF#1 AGAIN
0625	1040		TAD KCBF	/6201
0626	1045		TAD K10	
0627	3230		DCA I+1	
0630	6201	TFLO,	CDF 00	/ACDF CONTENTS NOW
0631	1447		TAD I K7000	/SAVE TEMP
0632	3032		DCA DAY	
0633	1032		TAD DAY	
0634	7041		CIA	/2'S COMP
0635	1030		TAD NDF	/BETTER BE EQUAL
0636	7640		SEA CLA	
0637	5252		JMP CAA=1	/ERROR PATH
0640	2031		ISZ STKS	/ALL WHEN 0
0641	5245		JMP I+4	
0642	2027		ISZ LOOP	/DONE WHEN 0
0643	5201		JMP DCAL	/NEXT TEST
0644	5256		JMP IBSP	
0645	1045		TAD K10	/CDF 10Y + 10
0646	1230		TAD TFLO	
0647	3230		DCA TFLO	
0650	2030		ISZ NDF	
0651	5230		JMP TFLO	
0652	1032	/	TAD DAY	/DATA AS READ
0653	7402	CAA,	HLT	/AC=DATA READ
0654	7200		CLA	
0655	5230	/TEST 03	JMP TFLO	

/CIF TEST, CHECKS THE ABILITY OF A CIF-ION-NOP-JMP OR
 /CIF-ION-NOP-JMS SEQUENCE TO DO THE FOLLOWING:
 /1, CIF ENABLE MB TO 18 TRANSFER;
 /2, INHIBIT INTERRUPT TILL JMP OR JMS EXECUTED;
 /3, INTERRUPT AFTER JMP OR JMS EXECUTED.

/4; JMP OR JMS ENABLES IB TO IF TRANSFER;
/5; INTERRUPT ENABLES IF TO SF TRANSFER;

/SET UP FOR CIF-ION=NOP=JMP CHECK;
IBSF, CDF 00 /SET LOGS I=2 TO ISZ 0;
TAD 1920 /JMP I 0 RESPECTIVELY;
DCA 1
TAD KNOP
DCA 2
TAD JMP10
DCA 3

0656 6201
0657 1021
0660 3001
0661 1332
0662 3002
0663 1020
0664 3003

/NOW STORE HALTS IN LOC1, CIFJMP=1,
/AND CIFJMS=1 OF ALL EXTENDED FIELDS,

JMS I XSTKS
TAD KCDF
TAD K10
DCA I+1
CDF 10
TAD KHLT
DCA K1
TAD KHLT
DCA CAB
TAD KHLT
DCA CAC
ISZ STKS
SKP I+3
JMP HLTS
TAD HLTS=2
CDF 00
TSF
JMS I XTFLG
DCA LOOP
TAD KCIF
DCA CIFJMP
DCA CIFCK
JMS I XSTKS
TAD CIFJMP
TAD K10
DCA CIFJMP
DCA CIFCK
TAD K10
DCA CIFCK
CIFJMP, CIF 00

0665 4423
0666 1040
0667 1045
0670 3271
0671 6211
0672 1037
0673 3443
0674 1037
0675 3754
0676 1037
0677 3755
0700 2031
0701 7410
0702 5305
0703 1271
0704 5267
0705 6201
0706 6041
0707 4422
0710 3027
0711 1041
0712 3323
0713 3353
0714 4423
0715 1323
0716 1045
0717 3323
0720 1353
0721 1045
0722 3353
0723 6202

/ENSURE TIO FLAG SET;
/SET COUNTER FOR 4096 PASSES,
/INITIALIZE TO CIF 00;
/INITIALIZE I.P. CHECK TO 0,
/READ SR9=11;

/MODIFIED TO CURRENT FIELD
/UNDER TEST;

0724 6001
0725 7000
0726 5327
0727 7402
0730 6234
0731 7041

ION
NOP
JMP
HLT
R18
CIA

/ERROR; NO PI OR INHIBIT PI,


```

1035 6234      RIB
1036 7402      CAE,
1037 7200      HLT
1040 5217      CLA
          JMP
          CIPJMS
          STKS
1041 2031      ISZ
1042 5211      JMP
1043 2027      ISZ
1044 5205      LOOP
1045 5647      JMP AGAIN2
1046 0000      JMP I
1047 2271      CIPCK1,0
          XGTF1,0 GTF1

```

```

/ERROR, I.B. TO I.F. TRANSFER
/PAILED AFTER CIPJMS, BAD
/I.F. IN AC6=8, GOOD I.F.
/IN AC9=11, REPEAT UPON CONTINUE
/DONE?
/NO, DO NEXT FIELD,
/0096 TIMES?
/NO, DO IT ALL AGAIN,
/YES, GO ON TO NEXT TEST

```

```

/TEST 10
/TEST INTERRUPT INHIBIT
/FROM EACH FIELD, REFER TO HEADING TITLED "EXTENDED
/FIELD TEST ROUTINE", THIS ROUTINE IS PLACED IN
/EACH TESTED FIELD AT THE ADDRESSES SPECIFIED; THE
/INDICATED ERROR HALTS WILL BE IN THE EXTENDED
/FIELD. PRESS CONT. TO RECOVER, ONLY 1 FIELD WILL
/CONTAIN THE ROUTINE AT ANY ONE TIME, OTHER FIELDS
/WILL CONTAIN ALLOIS, THE ROUTINE IS REPLACED WITH
/HALTS AFTER COMPLETION, THE PORTIONS OF THE FIELD
/WHICH DO NOT CONTAIN THE ROUTINE ARE SET TO 0000
/BEFOREHAND.
/
/
/SETUP FIELDS TO TEST, POINTERS, ETC.,

```

```

1050 4423      JMS I XSTKS
1051 1040      TAD KCDF
1052 3260      DCA I+6
1053 1260      TAD I+5
1054 1045      TAD K10
1055 3260      DCA I+3
1056 7040      CMA
1057 3010      DCA I0
1060 6201      CDF 00
1061 3410      DCA I 10
1062 1010      TAD I0
1063 7040      CMA
1064 7640      SZA CLA
1065 5261      JMP I+4
1066 2031      ISZ STKS
1067 5253      JMP TRMF+3

```

```

TRMF,
JMS I XSTKS
TAD KCDF
DCA I+6
TAD I+5
TAD K10
DCA I+3
CMA
DCA I0
CDF 00
DCA I 10
TAD I0
CMA
SZA CLA
JMP I+4
ISZ STKS
JMP TRMF+3

```

```

/PLACE 0'S IN EACH FIELD FROM
/LOC. 0 TO 7777,

```

```

/
/NOW PUT A HLT IN EACH FIELD IN THE SAME
/LOCATION AS CAL, BELOW,
/

```

```

1070 4423      JMS I XSTKS
1071 1040      TAD KCDF
1072 1045      TAD K10

```

```

JMS I XSTKS
TAD KCDF
TAD K10

```



```

1073 3294 DCA I+1
1074 6201 CDF 00
1075 1036 TAD KCAI
1076 3027 DCA LOOP
1077 1037 TAD KHLT
1100 3427 DCA I LOOP
1101 2031 ISZ STKS
1102 7410 SKP I+3
1103 5306 JMP I+3
1104 1274 TAD CHDF
1105 5272 JMP CHDF=2

1106 6201 CDF 00
1107 6041 TSP
1108 4422 JMS I XTFLG
1109 1050 TAD K7707
1110 3027 DCA LOOP
1111 1069 TAD POINT
1112 3066 DCA K78
1113 4423 JMS I XSTKS
1114 1040 TAD KCDF
1115 1049 TAD K18
1116 3327 DCA STDF
1117 1041 TAD KCIF
1118 1043 TAD K10
1119 3330 DCA STDF+1
1120 1330 TAD STDF+1
1121 3442 DCA I XFO
1122 4425 JMS I XTRANS

1127 6211 CDF 10
1128 6212 CIF 10
1129 5332 JMP I+1

1132 7000 NOP
1133 7402 HLT

1134 5327 JMP STDF

/ENTER HERE AFTER PI FROM EXTENDED BANK
1200
1201 6214 ROP
1202 7450 SNA
1203 5206 JMP I+4
1204 7402 HLT
1205 7200 CLA
1206 5476 JMP I XTDF
1207 6212 CIF 10
1208 6244 RMF
1209 6234 RIB
1210 6202 CIF 00
1211 6201 CDF 00

```

/KCAI = ADDRESS OF CAI;
/SAVE TEMPORARILY
/KHLT = 7402 (HLT)

/DONE ALL STACKS WHEN SKIP

/CHECK TTY FLAG
/GO SET IT

/POINTER FOR K7700 TO K7766
/READ SR 9=11
/6201
/10

/6202
/10

/PUT TEST ROUTINE INTO FIELD X

/FIELD 1 TO START WITH

/SHOULD ENTER EXTENDED FIELD
/AFTER THIS JMP; HLT IF NOT

/ERROR; PI FAILED
/CIAC) = C(1,B);
/REPEAT SAME TEST;

/ENTER HERE AFTER PI FROM EXTENDED BANK

/DF SHOULD BE 000
/ERROR IF SKIP
/CHECK C(SF)
/ACSC(DF)

/REPEAT TEST
/SET I:B, TO FIELD 1
/I:B, NOW EQUAL TO SF
/READ IB

```

1213      1466      TAD I K7S
1214      7040      CMA
1215      7650      SNA CLA
1216      5226      JMP CKPC
1217      6244      RMF
1220      6234      R1B
1221      7402      HLT

1222      7200      CLA
1223      6201      CDF 00
1224      6202      C1F 00
1225      5476      JMP I XTDF

/ CKPC,
1226      1036      TAD KCAI
1227      7001      IAC
1230      7041      CIA
1231      1000      TAD 0
1232      7650      SNA CLA
1233      5240      JMP I+5
1234      1000      TAD 0
1235      7402      HLT

1236      7200      CLA
1237      5476      JMP I XTDF

/ SETUP FOR NEXT FIELD
/
1240      2031      ISZ STKS
1241      5246      JMP I+5
1242      2027      ISZ LOOP
1243      5645      JMP I I+2
1244      5507      JMP I XF10
1245      1113      STRMP+4

/ SET LAST TESTED FIELD TO ALL 0'S AND PUT A
/ HLT IN RESPECTIVE ADDRESS OF CAI
/
1246      7240      CLA CMA
1247      3010      DCA 10
1250      1476      TAD I XTDF
1251      3252      DCA I+1
1252      6211      CDF 10
1253      3410      DCA I 10
1254      1010      TAD 10
1255      7040      CMA
1256      7640      SZA CLA
1257      5253      JMP I+4
1260      6201      CDF 00

```

/ERROR IF SKIP

/ERROR RMF AND PI WORKED, BUT
/I.B. NOT CORRECT AFTER RMF,
/AC=C(1B)

/BACKUP A PAGE AND REPEAT

/KCAI=ADDRESS OF CAI
/MAKE CAI+1

/COMPARE TO C(0)
/SHOULD NOT SKIP
/ALL OK SETUP FOR NEXT FIELD

/ERROR: ALL WORKED, BUT
/C(0) WAS NOT=TO CAI+1
/AFTER PI IN EXTENDED
/FIELD, C(AC)=C(0),F0;
/CHECK FOR PI NOT INHIBITED,
/OR AUTO-INDEX REG;
/12 FAILING IN THE EXTENDED FIELD;

/BACKUP AND REPEAT

/DONE ALL IF SKIP
/DONE LOOPING IF SKIP
/REPEAT ALL AGAIN
/EXIT TO NEXT TEST
/BACK TO LAST PAGE

/F1 TO START WITH

/CLEARD IF SKIP

1261 1476
1262 3263
1263 6211
1264 1037
1265 3436
1266 6201

TAD I XTDF /CDF X0 AT STOP
DCA I 14
CDF I 10
TAD KHLT /27402 (HLT)
DCA I KCAI /KCAI=ADDRESS OF CAI
CDF 00 /RESTORE OF

/INCREMENT CDF AND CIF 107'S AT STOP, STOP+1
/TO NEXT FIELD;
/

1267 1476
1270 1045
1271 3476
1272 1477
1273 1045
1274 3477
1275 1477
1276 3356
1277 2066
1278 4331
1279 9476

TAD I XTDF /CDF X0 AT STOP
TAD K10
DCA I XTDF
TAD I XTDF1 /CIF X0 AT STOP
TAD K10
DCA I XTDF1
TAD I XTDF1
DCA EXPD
ISE K7S

JMP I XTDF /TEST NEW FIELD
JMS TRANS /PUT ROUTINE IN NEW FIELD

/EXTENDED FIELD TEST ROUTINE

/THE FOLLOWING INSTRUCTIONS ARE PLACED IN
/EACH EXTENDED FIELD TESTED. THE NUMBERS IN THE
/COMMENTS FIELD CORRESPOND TO THE
/MEMORY LOCATIONS IN THE TESTED FIELD. LOCATIONS
/0 THRU 11 ARE USED FOR AN ERROR ROUTINE
/IN CASE FIELD 0 IS NOT ENTERED AFTER AN
/INTERRUPT. THE EXTENDED FIELD SHOULD BE
/ENTERED AT LOCATION CAI=1 WHICH CORRESPONDS
/TO CAI=1 IN FIELD 0.

/EXTENDED FIELD INSTRUCTIONS!

1302 0000
1303 1000
1304 7450
1305 2010
1306 7402

EXPLO 0 /0
TAD 0 /1
SNA /IF LOG, 0 NOT =0 PI DIDN'T
/ENTER FIELD 0
JMP 10 /3
HLT /4
/INTERRUPTED TO THIS FIELD
/INSTEAD OF FIELD 0, C(AC)=0(0)
/WHICH SHOULD BE CAI=1
/IF NOT, CHECK LOG: 7777, 17
/MUST = 5412 (JMP I 12),
/5
/6

1307 7200
1310 3000
1311 5420
1312 7402

CLA 0
DCA 0 /7, C(20) =CAI
JMP I 20 /10, THE JMP I 12 AT LOG:
HLT /7777 WAS NOT EXECUTED,
/OR INTERRUPT FAILED. IF
/NO INTERRUPT, LOCATION 12
/NOW CONTAINS 0 INSTEAD

```

1313 5005      /OF ADDRESS CAI,
1314 1133      JMP 5
                  CAI
                  /11, REPEAT IN THIS FIELD
                  /12, AUTOINDEXS TO CAI+1
                  /IN F 0 IF THE JMP I 12
                  /WORKS,
/LOCS, 13 TO 17 ARE ALL 0'S
/
1315 1133      CAI      /20, EQUALS CAI IN F0,
/
/LOCS, 21 TO CAI+2 ARE ALL 0'S
/
1316 6212      CIF 10 /FIELD 1 TO START WITH
1317 6001      ION      /LOC, CAI, SEE SYMBOL TABLE
                  /FOR CAI,
/LOCS, CAI+1 TO 7776 ARE ALL 0'S
/
1320 5412      JMP I 12      /7777, PI SHOULD OCCUR,
                          /AFTER THIS INSTRUCTION,
                          /TO FIELD 0,

```

/ROUTINE TO TRANSFER TEST ROUTINE TO PROPER FIELD

```

1321 0000      TRANS, 0
1322 1101      TAD KJMP      /KJMP=JMP I 2
1323 3001      DCA 1         /IN FIELD 0
1324 1102      TAD KNVR      /KNTR 0 LOC, ENTER
1325 3002      DCA 2         /OF FIELD 0
1326 1100      TAD KXFLD      /KXFLD = LOC, EXFLD
1327 3010      DCA 10
1328 3011      DCA 11
1329 1067      TAD K7766      /1=10 DECIMAL
1330 3000      DCA 0         /SAVE
1331 1476      TAD I XTDF      /CDF X0 IN STDF
1332 3337      DCA I+3
1333 6201      CDF 00
1334 1410      TAD I 10
1335 6211      CDF 10
1336 3411      DCA I 11
1337 2000      ISZ 0
1338 5335      JMP I+5
1339 1337      TAD TRFLD
1340 3347      DCA I+3
1341 6201      CDF 00
1342 1410      TAD I 10
1343 6211      CDF 10
1344 3503      DCA I K20
1345 6201      CDF 00
1346 1410      TAD TRFLD
1347 6211      CDF 10
1348 3503      DCA I K20
1349 6201      CDF 00
1350 1337      TAD TRFLD
1351 3355      DCA I+2
1352 1410      TAD I 10
1353 6211      CDF 10
1354 3435      DCA I KCAIM
1355 6201      CDF 00

```

/F1 TO START WITH
/PUT IN EXTENDED FIELD
/DONE LOCS 1 TO 12 IF SKIP

/PUT E40 IN LOC, 20

/PUT CIF X0 IN CAI+1


```

1426 5447      JMP I K7000      /IF SHOULD=FIELD
1427 2027      RTRN,          /WORKED OK
1430 5216      JMP CAG=2      /LOOP
1431 5232      JMP TAUTO        /DONE, GO TO NEXT TEST

/
/
/TEST I2
/TEST ALL AUTO-INDEX REGISTERS IN EACH EXTENDED FIELD.
/IDENTICAL TEST ROUTINES ARE PERFORMED FOR EACH FIELD.
/AND ERROR HALTS OCCUR IN THE FIELD CURRENTLY RUNNING.
/THE ROUTINE, PRESS CONT, TO RESUME TESTING, EACH
/FIELD CONTAINS ALL 2'S EXCEPT FOR THE AREA OCCUPIED
/BY THE TEST ROUTINE, FIELD 0 IS RE-ENTERED.
/AFTER EACH TEST, AND THE NEXT SEQUENTIAL FIELD
/IS THEN ENTERED, REFER TO THE HEADING "AUTO"
/INDEX TEST" FOR THE SEQUENCE OF OPERATIONS.
/
TAUTO,      CDF 00
            TAD K7707
            DCA LOOP
            JMS I XSTKS
            TAD KCDF
            DCA DFN
            TAD DFN
            TAD K10
            DCA DFN
NEWOP,
/
/CLEAR ONE FIELD TO 0
            CHA 10
            DCA 0
            CDF 10
            DCA I 10
            ISZ 0
            JMP I=2
            CDF 00
/
/NOW PUT TEST ROUTINE IN THE EXTENDED FIELD
/
TAD DOAUTO
DCA 10
TAD K7744
DCA 0
TAD DOAUTO
DCA 11
TAD DFN
DCA I=3
CDF 00
TAD I 10
CDF 10
DCA I 11
MOVE,
/
/1ST LOC. OF ROUTINE MINUS 1
/SOURCE
/28 DECIMAL
/USE LOC. 0 AS COUNTER
/DESTINATION
/CDF X0
/
/FIELD 1 TO START

```


1467 2000
1470 5203

ISZ 0 /MOVE WHEN SKIP
JMP MOVE

1471 1110
1472 3000
1473 1044
1474 3010
1475 7040
1476 3410
1477 2000
1500 5275
1501 7040
1502 3446
1503 6214
1504 1041
1505 3306
1506 6212
1507 4716

TAD K7770 /00 DECIMAL
DCA 0 /7
TAD K7 /7777
DCA 10 /10 TO 17 = 7777 WHEN SKIP
CMA 1 10
ISZ 0
JMP 103
CMA 1 K7777
DCA 1 K7777
DCA 1 K7777
TAD KCIF
DCA 10
CIF 10
JMS 1 FILDY

/PUT 7777 IN LOC. 7777 OF EXTENDED FIELD

/READ O.F.

/6202

/FIELD 1 TO START
/ENTER EXTENDED FIELD
/915 OCTAL LOGS, BEFORE THE
/TAD 1 10 INSTRUCTION.
/THIS IS A TEST OF THE
/DEFER BIT, 500 US DELAY

/ENTER FIELD 0 FROM EXTENDED FIELD HERE.

1510 2031
1511 5240
1512 2027
1513 5235
1514 5715
1515 1600
1516 1002

COY00, ISZ STKS /DONE ALL WHEN SKIP
JMP NEWDF /SETUP FOR NEXT
ISZ LOOP /ALL DONE IF SKIP
JMP NEWDF=3 /REPEAT ALL
JMP 1 LBTP
LBTP, RMTST

FILDY, DOAUTO=515

AUTO=INDEX TEST

/THE ROUTINE WILL BE PLACED IN THE SAME RESPECTIVE
/LOCATIONS IN EACH EXTENDED FIELD; ANY ERROR
/HALTS WILL OCCUR IN THE EXTENDED FIELD. PRESS
/CONTINUE TO PROCEED WITH TESTING. THE INDEX
/REGISTERS 10 TO 17 INITIALLY CONTAIN 7777, AND
/ARE AUTO-INDEXXED TO 0000 BY A TAD 1 INSTRUCTION.
/A HALT OCCURS IF THE REG. IS NOT INCREMENTED TO 0.
/THE TAD 1 WOULD HAVE THEN REFERENCED LOC. 7777,
/WHICH CONTAINS 7777.

1517 1517
1520 7200

DOAUTO, /THIS LOC. IS NOT MOVED TO
CLA /THE EXTENDED FIELD.


```

2030 XFERL1, CDF 00 /TRANSFER
2031 TAD I 10
2032 CDF I 11
2033 DCA I 11
2034 ISE XFERC1 /DONE WITH CURRENT FIELD?
2035 JMP XFERL1 /NO, CONTINUE
2036 ISE XFERC2 /DONE WITH ALL FIELDS?
2037 JMP XFERL2 /NO, DO NEXT FIELD
2038 CDF 00 /ALL DONE, SET DF=0
2039 JMP I XFER /EXIT
2040 0
2041 0
2042 0
2043 0
2044 0
2045 0
2046 0

```

```

N2,
N1,
P,
XFERC2, 0
XFERC1, 0
/TEST 06
/NO, DO A READ AND WRITE DATA TEST IN
/ALL AVAILABLE EXTENDED FIELDS,
/IF A FAILURE OCCURS CHECK LOC, 10
/FOR BAD ADDRESS AREA AND LOC, RANA
/FOR THE MOST RECENT FIELD CHANGE,
/LOC, KDATA CONTAINS DATA PATTERN USED,

```

```

2047 DATER, 0000
2048 CLA CLL
2049 JMS I XSTKS
2050 TAD KCP
2051 TAD K10
2052 DCA RANA
2053 CLA CLL CMA
2054 DCA 10
2055 CDF
2056 JMS FILL CLL
2057 CLA CMA CLL
2058 DCA 10
2059 JMS CHECK
2060 CLA CLL
2061 ISE STKS
2062 SKP
2063 JMP I 0
2064 TAD RANA
2065 TAD K10
2066 DCA RANA #2
2067 JMP RANA
2068 CDF
2069 JMP I DATER

```

/MODIFIED UNDER TEST

/SET AUTO REGISTER

/LOAD UP FIELD WITH DATA

/CHECK DATA IN FIELD

/CHECK NEXT FIELD

```

/ROUTINE TO FILL FIELD WITH DATA
/
FILL, 0000
CLA CLL
TAD KDATA
DCA I 10
TAD KDATA

```

```

2076 0000
2077 7300
2078 1157
2079 3410
2080 1157

```



```

2103 7040      CMA
2104 3410      DCA I 10
2105 1010      TAD 10
2106 7001      IAC
2107 7040      SZA CLA
2110 5277      JMP FILL +1
2111 5676      JMP I FILL

/ROUTINE TO CHECK DATA IN FIELD
/
CHECK, 0000
2112 2000      CLA CLL
2113 7300      TAD I 10
2114 1410      IAC
2115 7001      TAD I 10
2116 1410      SZA
2117 7440      HLT
2120 7402      CLA CLL
2121 7300      TAD 10
2122 1010      IAC
2123 7001      SZA CLA
2124 7640      JMP CHECK +1
2125 5313      JMP I CHECK
2126 9712

/AC CONTAINS BAD BITS
/MEMORY CONTROL WORKED BUT
/ DATA PATTERN FAILURE IN
/ EXTENDED MEMORY.
/IS CHECK DONE

/TEST 14
/REFERENCE ALL 4K FIELDS NOT PRESENT,
/IF 32K IS PRESENT, THE TEST IS BY-PASSED,
/EACH FIELD NOT PRESENT IS REFERENCED
/BY THE PROGRAM WITH JMP, DCA AND TAD.
/ THE PROGRAM MUST CONTINUE IN SEQUENCE
/BELL WILL SIGNAL A SUCCESSFUL TEST
/
2200 7200      NOMEM, CLA
2201 1110      TAD K7770
2202 3027      DCA LOOP
2203 7604      LAS
2204 0044      AND K7
2205 7041      CIA
2206 1044      TAD K7
2207 7450      SNA
2210 5546      JMP I XXSR0
2211 3033      DCA NOSTAK
2212 3547      DCA I XELL

/TEST LOOP COUNTER
/READ SR9+11
/SUBTRACT MAX, POSSIBLE
/32K PRESENT, CAN'T TEST
/SAVE NO, MISSING
/CLEAR THE TLS IOT AT
/BELL+1 TO PROHIBIT
/ FALSE INDICATION, TLS
/IS RESTORED LATER WRONG
/ENTRY FROM NON-EXISTENT

```

```

2213 7604 LAR
2214 0044 AND K7
2215 7001 IAC
2216 7100 CLL
2217 7006 RTL
2220 7004 RAL
2221 3034 DCA NOPLO
2222 1033 TAD NOSTAK
2223 7041 CIA
2224 3033 DCA NOSTAK

```

```

2225 1040 TAD KCOF
2226 1034 TAD NOPLO
2227 3245 DCA CDP0S

```

```

/ NOW READ ALL 0'S FROM ALL NON-EXISTENT FIELDS
/ IF CONTROL PORTION ONLY, RING BELL.
/ IF NOT PROCEED TO TIME SHARE.

```

```

2230 4244 JMS ALL0
2231 2033 ISE NOSTAK
2232 5237 JMP POS
2233 2027 ISE LOOP
2234 5636 JMP I XNOM
2235 5546 JMP I XXSR0

```

```

2236 2203 XNOM,
2237 1245 POS,
2240 1045 TAD CDP0S
2241 3245 DCA CDP0S
2242 4244 JMS ALL0
2243 5231 JMP CNSTK

```

```

/ ROUTINE TO READ ALL 0'S.
/
2244 0000 ALL0,
2245 6201 CDP0S,
2246 7240 CLA CMA
2247 3010 DCA 10
2248 7040 CMA
2249 3011 DCA 11
2250 3002 DCA 2
2251 7040 CMA
2252 3010 DCA 1 10
2253 7040 CMA
2254 3410 DCA 1 10
2255 2002 ISE 2

```

```

/ SET OF TO 1ST MISSING
/ 10 AND 11 USED FOR ADDRESS
/ USE AS COUNTER
/ WRITE 1'S INTO NON-EXISTENT FIELD.

```



```

2256 5253 JMP I+3
2257 1411 TAD I+1
2260 7650 SNA CLA
2261 5264 JMP I+3
2262 1011 TAD I+1
2263 7402 HLT
CAX,
/READ NON-EXIST. FIELD
/SHOULD = 0000
/ERROR, AN EXISTING FIELD
/WAS REFERENCED, C(IAC)
/ADDRESS REFERENCED
/READ NEXT
ISE 2
JMP CAX=4
DONE0, CDF 00
CIF 00
JMP I+ALL0 /EXIT
/TEST 04
/TEST GTF FOR FLAG AND SAVE FIELDS
/GET SAVE FIELDS AFTER INTERRUPT
/CHECK INTERRUPT INHIBIT, DO ALL
/COMBINATIONS 0 TO 7,
GTF1, CLA CLL
TAD JMP10 /SET FOR RETURN
DCA I
TAD KODF
DCA XSDF
TAD XSDF
AND K0070 /GET FIRST FIELD
MGTF, STL
RAR
RTR
DCA XSAV
CDF 00
TSP I XTFLG
JMS I XTFLG
ION
CLA CLL CMA
GTF
CIA
TAD XSAV
SZA
HLT
ISE LOOP
JMP MGTF
TAD K10
TAD XSDF
DCA XSDF
ISE XCOUNT
JMP MGTF
TAD K770
DCA XCOUNT
JMP I XION1
/YES, GO TO NEXT TEST

```

```

2330 2331      XION1, ION1
/TEST 05
/TEST ION AND LINK FROM RTP
/TEST INTERRUPT INHIBIT BEFORE PI
/GET THE FLAGS WITH GTF,
/
ION1,
2331 7300      CLA CLL
2332 1021      TAD ISE0
2333 3001      DCA 1
2334 1020      TAD JMP10
2335 3002      DCA 2
2336 6005      RTP
2337 5340      JMP I+1
2340 7402      HLT
2341 7300      CLA CLL
2342 1115      TAD K5200
2343 6005      RTP
2344 7240      CLA CMA
2345 6004      GTF
2346 7041      CIA
2347 1115      TAD K5200
2350 7440      SEA
2351 7402      HLT
2352 7300      CLA CLL
2353 6005      RTP
2354 7300      CLA CLL
2355 6004      GTF
2356 7041      CIA
2357 1116      TAD K1200
2360 7440      SEA
2361 7402      HLT
2363 5363      JMP I+1
2364 7402      HLT
2365 7300      CLA CLL
2366 2027      ISE LOOP
2367 5331      JMP ION1
2370 4773      JMS I XCON1
2371 5772      JMP I XRTF1
2372 2400      XRTF1,
2373 4000      XCON1, CON1
/TEST 08
/TEST DF00 + IF00 FROM SAVE FIELD AFTER PI
/USE RTP TO SET THE FLAGS AND GTF TO GET THE FLAGS
/CHECK INTERRUPT INHIBIT, DO ALL SAVE
/FIELD COMBINATIONS 0 TO 77,
/
*2400
RTP1,
2400 7300      CLA CLL
2401 4422      JMS I XTFLG
2402 1021      TAD ISE0
2403 3001      DCA 1
/SET TTY FLAG

```

/WAS INT, INH;

/CHECK FOR JAM ON GTF
/GET LINK, ION, TTY FLAG

/EXPECTED BITS

/WAS LINK, ION, TTY FLAG SET

/REPLACE ION, INT INH

/TTY FLAG, ION, NO LINK

/WAS INT INH

/4096 TIMES

/GO TO NEXT TEST

/GO TO NEXT TEST

/GO TO NEXT TEST

XRTF1,
XCON1, CON1

2400


```

2404 1020      TAD JMP10
2405 3002      DCA 2
2406 3114      DCA XTOR
2407 1114      TAD XTOR
2410 6005      RTF
2411 5212      JMP 1=1
2412 7402      HLT
2413 7300      CLA CLL
2414 6004      GTF
2415 0117      AND K0077
2416 7041      CIA
2417 1114      TAD XTOR
2420 7440      SEA
2421 7402      HLT
2422 5207      ISE LOOP
2423 5207      JMP XSRTF
2424 1114      TAD XTOR
2425 1120      TAD K0011
2426 3114      DCA XTOR
2427 2113      ISE XCOUNT
2430 5207      JMP XSRTF
2431 1110      TAD K7770
2432 3113      DCA XCOUNT
2433 5634      JMP 1 XRTG1
2434 2452      RIG1
2435 0000      NSTKS,
/
2436 7604      LAS
2437 0044      AND K7
2440 7041      CIA
2441 3031      DCA SYKS
2442 5635      JMP 1 NSTKS
/
/SET TTY FLAG
/
TFLG, 0
CLA
SPF
TSP
JMP 1=1
CLA
JMP 1 TFLG /EXIT

/TEST 09
/TEST PROGRAM INTERRUPT IN EXISTING FIELDS
/USE RTF, GTF, RDF AND RIF FOR CHECK
/CHECK PC, AC, SF AND FLAGS AFTER PI
/IF FAILURE OCCURS CHECK XDATA FOR AC DATA,
/LOC, 0 FIELD 0 FOR CORRECT PC AFTER PI,
/AND IFDF FOR CORRECT DF XX + IF XX,
/PROGRAM SHOULD INTERRUPT INHIRT YILL JMP 1 ADRS
/IF PI FAILS TO INTERRUPT HLT IN THAT FIELD
/
RIG1, CLA CLL
JMS 1 XSTKS

2452 7300
2453 4423

```

/MAKE DF 00 + IF 00

/WAS INT INH

/GET THE FLAGS

/EXPECTED BITS

/WAS DF + IF SET
/4096 TIMES

/DO THE REST DF 00 + IF 00

/READ SR 9-11

2434 1120 TAD K0011
2435 3260 DCA IFDF
2436 1132 TAD K0017
2437 3010 DCA 0010
2440 0000 0000
2441 7300 CLA CLL
2442 1260 TAD IFDF
2443 6005 RTF
2444 6002 IOP
2445 7300 CLA CLL
2446 2537 ISE I K0000
2447 7000 NOP
2448 1537 TAD I K0000
2449 3136 DCA XDATA
2450 1124 TAD K7402
2451 3541 DCA I K0001
2452 1133 TAD K6001
2453 3410 DCA I 0010
2454 1130 TAD K1000
2455 3410 DCA I 0010
2456 1124 TAD K7402
2457 3410 DCA I 0010
2458 1010 TAD 10
2459 1057 TAD K7776
2460 3310 DCA ADRS
2461 1134 TAD JMP1R
2462 3001 DCA 0001
2463 5710 JMP I, +1
2464 0000 0000
2465 7041 CIA
2466 1136 TAD XDATA
2467 7440 SEA
2468 7402 HLT
2469 1000 TAD 0000
2470 7041 CIA
2471 1010 TAD 0010
2472 7440 SEA
2473 7402 HLT
2474 6214 ROP
2475 6224 RIP
2476 7640 SEA CLA
2477 7402 HLT
2478 6004 GTF
2479 0117 AND K0077
2480 7041 CIA
2481 1260 TAD IFDF
2482 7440 SEA
2483 7402 HLT
2484 1010 TAD 0010
2485 7001 IAC
2486 7640 SEA
2487 5261 JMP IFDF+1
2488 2031 ISE STKS
2489 7410 SKP
2490 5750 JMP I XTRMF

IFDF,

ADRS,
RET,

/SET TO CURRENT FIELD UNDER TEST

/SET FIELDS AND TURN ION

/STORE A HLT IN LOC 1 OF THAT FIELD

/ION FOR THAT FIELD

/TAD FOR THAT FIELD

/HLT FOR FAILURE

/SET LOC 1 FOR RETURN AFTER PI
/GO TO THAT FIELD

/AC DATA FAILED DURING PI

/PC FAILED DURING PI

/SHOULD BE 0 AFTER PI

/GTF OR RTF OR SF FAILED

2543	7300	CLA CLL	
2544	1120	TAD K0011	
2545	1260	TAD IFOF	/SET FOR NEXT FIELD
2546	3260	DCA IFOF	
2547	5256	JMP IFOF -2	
2550	1050	XTRMF, TRMF	

/TEST 15
 /TEST TIME SHARE IN FIELD 0.
 /ALL HLT, OSR, AND IOT INSTRUCTIONS
 /SHOULD TRAP IN USER MODE.

2600

2600	7300	CLA CLL	
2601	6007	CAF	
2602	6264	CUP	
2603	6204	CINT	
2604	1021	TAD ISE0	
2605	3001	DCA 1	
2606	1020	TAD JMP10	
2607	3002	DCA 2	
2610	6007	CAF	
2611	7410	SKP	/CAF TRAPED
2612	5212	JMP	
2613	6001	ION	
2614	7410	SKP	/ION TRAPED
2615	5215	JMP	
2616	6032	KCC	
2617	7410	SKP	/KCC TRAPED
2620	5220	JMP	
2621	6002	IOF	
2622	7410	SKP	/IOF TRAPED
2623	5223	JMP	
2624	6004	GTF	
2625	7410	SKP	
2626	5226	JMP	/GTF TRAPED

/THESE INSTRUCTIONS SHOULD TRAP
 T2,

/USER MODE

/HLT DID NOT TRAP

/EXECUTIVE MODE

/SKIP ON TRAP FLAG
 /FLAG NOT UP
 /CLEAR TRAP FLAG
 /SKIP ON TRAP FLAG
 /TRAP FLAG STILL SET
 /SHOULD NOT TRAP
 /LAS TRAPED IN EXECUTIVE MODE

2634	6234	SINT	
2635	5235	JMP	
2636	6204	CINT	
2637	6254	SINT	
2640	7410	SKP	
2641	5241	JMP	
2642	7604	LAS	
2643	7410	SKP	
2644	5244	JMP	

```

2645 6244      RMP      /RESTORE USER
2646 6001      ION
2647 5250      JMP I+1  /GO TO USER
                /USER MODE
2650 7404      OSR      /SHOULD TRAP ON OSR
2651 5251      JMP I+1  /DID NOT TRAP
                /EXECUTIVE MODE
2652 6254      SINT
2653 5253      JMP I+1  /SKIP ON TRAP FLAG
2654 6007      CAP      /DID NOT SKIP
2655 6254      SINT     /CLEAR TRAP FLAG
2656 7410      SKP      /TEST IF CLEARED
2657 7402      HLT
2660 7404      OSR      /TRAP FLAG NOT CLEARED
2661 7410      SKP      /SHOULD NOT TRAP
2662 5262      JMP I+1  /ORS TRAPED IN EXECUTIVE MODE
2663 6244      RMP      /RESTORE MODE
2664 6001      ION
2665 5266      JMP I+1  /GO TO USER
                /USER MODE
2666 6005      RTF
2667 5267      JMP I+1  /MAKE THE FLAGS
                /EXECUTIVE MODE
2670 6254      SINT
2671 5271      JMP I+1  /TRAP FLAG NOT SET
2672 6204      CINT     /CLEAR TRAP FLAG
2673 6254      SINT     /TEST IF CLEARED
2674 7410      SKP
2675 7402      HLT
2676 6004      GTF
2677 7410      SKP
2678 5300      JMP I+1  /TRAP FLAG NOT CLEARED
2679 6244      RMP      /SHOULD NOT TRAP
2680 6001      ION
2681 5304      JMP I+1  /TRAPED IN EXECUTIVE MODE
                /RESTORE MODE
                /GO TO USER
                /USER MODE
2684 6001      ION
2685 5305      JMP I+1  /ION DID NOT TRAP
                /EXECUTIVE MODE
2686 6254      SINT
2687 5307      JMP I+1  /SKIP ON TRAP FLAG
2688 7300      CLA GLL   /TRAP FLAG NOT SET
2689 6004      GTF
2690 0126      AND K0100
2691 7450      SNA
2692 7402      HLT
2693 6204      CINT
2694 6254      SINT
2695 7410      SKP
2696 7402      HLT
2697 6002      IOP
2698 6002      SKP

```



```

2723 5323 JMP ,
2724 6244 RMP ,
2725 6001 ION
2726 5327 JMP I+1
      /USER MODE
      /TEST CUF AND CUF+10
      LAS
      JMP I
      /EXECUTIVE MODE
      CINT
      RMP
      CUF
      ION
      JMP I+1
      OSR
      SKP
      /TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE
      CINT
      CUF+10
      ION
      JMP I+1
      /USER MODE
      CMA CLA
      LAS
      JMP I
      /EXECUTIVE MODE
      SEA
      HLT
      CINT
      RMP
      ION
      JMP I+1
      /USER MODE
      CLA
      OSR
      JMP I
      /EXECUTIVE MODE
      SEA
      HLT
      CINT
      RMP
      ION
      JMP I+1
      /USER MODE
      CLA CMA
      HLT CLA
      JMP I
      /EXECUTIVE MODE
      SEA
      HLT
      CINT
      SRQ
      SKP
2727 7604
2730 5330
2731 6204
2732 6244
2733 6264
2734 6001
2735 5336
2736 7404
2737 7410
2740 5340
2741 6204
2742 6274
2743 6001
2744 5345
2745 7240
2746 7604
2747 5347
2750 7440
2751 7402
2752 6204
2753 6244
2754 6001
2755 5356
2756 7200
2757 7404
2760 5360
2761 7440
2762 7402
2763 6204
2764 6244
2765 6001
2766 5367
2767 7240
2770 7602
2771 5371
2772 7440
2773 7402
2774 6204
2775 6003
2776 7410

```

/IOF TRAPED IN EXECUTIVE MODE
/RESTORE MODE
/GO TO USER

/DID NOT TRAP

/STAY IN EXECUTIVE MODE

/CUF DID NOT WORK
/TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE

/SET USER

/GO TO USER

/AC=7777
/SHOULD CLEAR AC
/DID LAS TRAP

/LAS CHANGED AC

/SHOULD NOT READ SR

/OSR CHANGED AC

/SHOULD CLA
/DID HLT TRAP

/(HLT CLA) DID NOT CLEAR

```

2777 7402 HLT
3000 7300 CLA CLL
3001 1126 TAD K0100
3002 6003 RTF
/INTERRUPT REQUEST
/ENABLE USER

3003 6001 ION
3004 7000 NOP
3005 5206 JMP I+1
/USER MODE
3006 6032 KCC
3007 5207 JMP
/EXECUTIVE MODE
3010 6003 SRQ
/DO KCC TRAP
/IS USER FLAG SET

3011 5210 JMP I+1
3012 6204 CINT
3013 7300 CLA CLL
3014 1126 TAD K0100
3015 6003 RTF
3016 7300 CLA CLL
3017 6001 ION
3020 5221 JMP I+1
/ENTER USER
/USER MODE
3021 6004 GTF
3022 5222 JMP
/DO GTF TRAP
/EXECUTIVE MODE
3023 0126 AND K0100
3024 7440 SEA
3025 7402 HLT
3026 6003 SRQ
3027 5226 JMP I+1
3030 6204 CINT
3031 6244 RMP
3032 6001 ION
3033 5234 JMP I+1
/USER MODE
3034 6004 GTF
3035 5235 JMP
/EXECUTIVE MODE
3036 6254 SINT
3037 5237 JMP
3040 6204 CINT
3041 6254 SINT
3042 7410 SKP
3043 5243 JMP
3044 6001 ION
3045 7410 SKP
3046 5246 JMP
3047 6244 RMP
3050 5251 JMP I+1
/USER MODE
3051 6202 CIP
3052 5252 JMP
/EXECUTIVE MODE
3053 6254 SINT

```

```

/DO NOT TRAP
/SKIP ON TRAP FLAG
/FLAG NOT UP
/CLEAR TRAP FLAG
/SKIP ON TRAP FLAG
/TRAP FLAG STILL SET
/ION TRAPED IN EXECUTIVE MODE
/RESTORE USER
/GO TO USER
/SHOULD TRAP ON CIP
/DID NOT TRAP
/SKIP ON TRAP FLAG

```



```

3054 5254 JMP ;
3055 6204 CINT
3056 6254 SINT
3057 7410 SKP
3060 7402 HLT
3061 6202 CIP
3062 7410 SKP
3063 5263 JMP ;
3064 6244 RHF
3065 6001 ION
3066 5267 JMP ;+5

      /DID NOT SKIP
      /CLEAR TRAP FLAG
      /TEST IF CLEARED
      /TRAP FLAG NOT CLEARED
      /SHOULD NOT TRAP
      /CIF TRAPED IN EXECUTIVE MODE
      /RESTORE MODE
      /GO TO USER

3067 6214 /USER MODE
3070 5270 ROP
      JMP ;
      /EXECUTIVE MODE
3071 6254 SINT
3072 5272 JMP ;
3073 6204 CINT
      /TRAP FLAG NOT SET
      /CLEAR TRAP FLAG
      /TEST IF CLEARED
      /TRAP FLAG NOT CLEARED
      /SHOULD NOT TRAP
      /TRAPED IN EXECUTIVE MODE
      /FLAG SHOULD WORK

3074 6254 SINT
3075 7410 SKP
3076 7402 HLT
3077 6214 ROP
3080 7410 SKP
3081 5301 JMP ;
      /EXECUTIVE MODE
      SP

3103 6041 TSP
3104 5303 JMP ;+1
3105 6003 SRQ
3106 5305 JMP ;+1
3107 6001 ION
3110 7300 CLA CLL
3111 5311 JMP ;
3112 1126 TAD K0100
3113 6005 RTF
3114 6007 CAF
3115 6001 ION
3116 5317 JMP ;+1
      /USER MODE
      CAP
3117 6007 JMP ;
3120 5320 /EXECUTIVE MODE
      SRQ
3121 6003 HLT
3122 7402 CAF
3123 6007 CAF
3124 6254 SINT
3125 7410 SKP
3126 7402 HLT
      /TEST THAT TTI DOES NOT
      /FLAG CLEARED
      /CHANGE AC
      /AC=7777
      /LINK=1
3127 7240 CLA CHA
3130 7120 STL

```

```

3131 6274 CUF+10
3132 6001 ION
3133 5334 JMP I+1
        /USER MODE
3134 6036 KRB
3135 5335 JMP I
        /EXECUTIVE MODE
3136 7040 CMA
3137 7440 SZA
3138 5340 JMP I
3139 7420 SNL
3140 5342 JMP I
3141 6254 SINT
3142 5344 JMP I
3143 6204 CINT
3144 6244 RMP
3145 6001 ION
3146 5351 JMP I+1
        /USER MODE
3147 6040 SPF
3148 5352 JMP I
        /EXECUTIVE MODE
3149 6041 TSF
3150 7410 SKP
3151 7402 HLT
3152 6254 SINT
3153 5357 JMP I
3154 6204 CINT
3155 6244 RMP
3156 6001 ION
3157 5764 JMP I, I+1
3158 5200 I, 177+1
        *; 177+1
        /USER MODE
3159 6001 ION
3160 5201 JMP I
        /EXECUTIVE MODE
3161 6254 SINT
3162 5203 JMP I
3163 6204 CINT
3164 6254 SINT
3165 7410 SKP
3166 7402 HLT
3167 6002 IOP
3168 7410 SKP
3169 5212 JMP I
3170 6244 RMP
3171 6001 ION
3172 5216 JMP I+1
        /USER MODE
        /TEST CUF AND CUF+10
        RIF
3173 6224

```

/SHOULD NOT ZERO LINK OR SHIFT AC

/AC SHOULD BE 0000
 /AC WAS CHANGED
 /LINK SHOULD EQUAL 1
 /LINK WAS CHANGED
 /SKIP ON TRAP FLAG
 /TRAP FLAG NOT SET

/FLAG
 /DID SPF TRAP

/TTY FLAG

/TRAP FLAG NOT SET
 /CLEAR TRAP FLAG

/GO TO USER

/ION DID NOT TRAP
 /SKIP ON TRAP FLAG
 /TRAP FLAG NOT SET
 /CLEAR TRAP FLAG
 /TEST IF CLEARED
 /FLAG NOT CLEARED
 /SHOULD NOT TRAP
 /IOP TRAPED IN EXECUTIVE MODE
 /RESTORE MODE
 /GO TO USER


```

3217 3217 JMP ;
/EXECUTIVE MODE
3220 6204 CINT
3221 6244 RMP
3222 6264 CUF
3223 5224 JMP I+1
3224 7404 OSR
3225 7410 SKP
3226 5226 JMP ;
/EXECUTIVE MODE
3227 7240 CLA CHA
3230 6274 CUF +10
3231 6001 ION
3232 5233 JMP I+1
/USER MODE
3233 7402 HLT
3234 5234 JMP ;
/EXECUTIVE MODE
3235 6203 CDF CIP
3236 6264 CUF
3237 6204 CINT
3240 6001 ION
3241 5242 JMP I+1
3242 7604 LAS
3243 7410 SKP
3244 5244 JMP ;
3245 7450 SNA
3246 5246 JMP ;
/TEST HLT AND SKIP
3247 6274 CUF+10
3250 6001 ION
3251 5252 JMP I+1
/USER MODE
3252 7412 SKP HLT
3253 5253 JMP ;
3254 5254 JMP ;
/EXECUTIVE MODE
3255 6254 SINT
3256 5256 JMP ;
3257 6204 CINT
3260 6254 SINT
3261 7410 SKP
3262 5262 JMP ;
/LOOP PROGRAM
3263 2266 ISZ I+3
3264 5531 JMP I TIME
3265 7410 SKP
3266 0000 0
3267 5670 JMP I ,+1
3270 3400 I ,+1
3400 *I ,+1

```

```

3400 7200 /TEST THAT ALL IOTS TRAP IN USER MODE
3401 1125 CLA
3402 3207 TAD K0000
3403 6274 DCA INST
3404 6204 CUP+10
3405 6001 CINT
3406 5207 ION
3407 6000 JMP I+1
3410 5210 /USER MODE
3411 6254 INST, 6000
3412 5212 JMP
3413 6204 /EXECUTIVE MODE
3414 6254 SINT
3415 7610 CINT
3416 7402 SKP CLA
3417 2207 HLT
3420 1207 ISE INST
3421 0130 TAD INST
3422 7650 AND K1000
3423 5203 SNA CLA
3424 1124 JMP IOTS
3425 3232 /NO - TEST THE REST
3426 6274 /BASIC HALT INST
3427 6204 /SET UP
3430 6001 /SET FOR USER
3431 5232 /CLEAR FLAG
3432 7406 /GO TO USER MODE
3433 5233 /OPERATE TRAP INST
3434 7000 /DID NOT TRAP
3435 6254 /FOR (HLT,SKP)(OSR,SKP)
3436 5236 /SKIP ON TRAP FLAG
3437 6204 /TRAP FLAG NOT SET
3440 6254 /CLEAR FLAG
3441 7610 /FLAG DID NOT CLEAR
3442 7402 /GENERATE ALL GROUPS OF
3443 1232 /HALTS AND OSR
3444 1123 /GENERATED ALL
3445 3232 /NO - TEST THE REST
3446 1232 /SHOULD NOT TRAP
3447 1122
3450 7640
3451 5226
3452 6244
3453 6264
3454 6001
3455 5256
3456 6002

```



```

3457 6254 SINT
3460 7410 SKP
3461 7402 HLT
3462 6040 SPP
3463 6041 TSP
3464 5263 JMP 1=1
3465 6001 JON
3466 7410 SKP
3467 7402 HLT
3470 7402 HLT

      /TRAP FLAG SET
      /SHOULD SKP

      /DID P1 INTERRUPT
      /DID PC INCR.

      /SUP SET

      CLA CLL
      GTF
      AND K0100
      SZA
      HLT
      CLA CLL
      GTF
      CUP
      NOP
  
```

```

/TEST I6
/TEST TIME SHARE IN EXTENDED MEMORY
/NOW TEST USER MODE TRAP IN ALL EXTENDED FIELDS
/IF TRAP ERROR OCCURS HLT IN THAT FIELD
/USE RTF TO SET USER MODE AND GTF TO GET THE FLAGS
/TEST ALL 10718 FOR TRAP AND RETURN
/
R162,
  
```

```

3502 7300 CLA CLL
3503 6007 CAP
3504 4423 JMS I XSTKS
3505 1040 TAD K007
3506 1045 TAD K10
3507 3335 DCA BRD
3508 1041 TAD K01F
3509 1045 TAD K10
3510 3347 DCA SRI
3511 1144 TAD K3377
3512 1144 DCA 10
3513 1145 TAD K7745
3514 1145 DCA SRCO
3515 3143 CMA
3516 7040 DCA 11
3517 3011 TAD SRD
3518 1335 AND K0070
3519 0111 RAR
3520 7010 RTR
3521 7012 DCA XSAV
3522 3112 TAD SRI
3523 1347 AND K0070
3524 0111 TAD XSAV
3525 1112 TAD K1000
3526 1142 DCA I XFDCON
3527 3776 CDF 00
3528 6201
  
```

STAN,

/MAKE FLAGS FOR RETURN CHECK

ADDRESS	INSTRUCTION	COMMENT
3534	TAD I 10	
3535	CPF 00	
3536	DCA I 11	/STORE INSTRUCTIONS
3537	ISZ SRD	
3538	JMP SRD=2	
3539	TAD ISZ0	
3540	DCA I 1	/SET FIELD 0 FOR RETURN
3541	TAD BRT	
3542	DCA 2	
3543	TAD JMP10	
3544	DCA 3	
3545	CPF 00	
3546	JMP 2	/GO TO FIELD UNDER TEST
3547	CLA CLC	
3548	ISZ STKS	
3549	SKP EXITT	
3550	JMP SRD	/MORE FIELDS
3551	TAD K10	/GO TO CONTROL
3552	DCA SRD	/SET UP FOR NEXT FIELD
3553	TAD SR1	
3554	TAD K10	
3555	DCA SR1	
3556	JMP STAN	/TEST THIS FIELD
3557	CLA CLC	/TEST DONE GO TO BEGIN
3558	CAF	
3559	CUF	
3560	TAD TTB	
3561	DCA I XELL	
3562	LAS	
3563	SMA CLA	
3564	JMP I XBELL	
3565	HLT	/TIME SHARE ENABLED
3566		/AN ERROR CONDITION EXISTS.
3567		/HIT CONTINUE TRY AGAIN
3568	JMP I XTRAP	
3569	FDGON	
3570		/INSTRUCTIONS TO BE TRANSFERRED TO FIELDS
3571		
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3706		
3707		
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```
3614 7640          SZA CLA
3615 7402          HLT
3616 6003          SRQ
3617 5216          JMP I+1
3620 6204          CINT
3621 2206          ISZ IOYX
3622 1206          TAD IOYX
3623 1231          TAD F1000
3624 7640          SZA CLA
3625 5202          JMP PD80
3626 6202          CIP
3627 5630          JMP I PRET
3630 3551          SRRET
3631 1000          F1000,
3632 0000          F0000,

          /PRET,
          /F1000,
          /F0000,
          /CHECK SR091 FOR MEMORY EXTENSION ONLY
          /XSR0,
          CLA CLL
          LAS
          SMA CLA
          JMP I TIME
          CAP
          TAD TTB
          DCA I XELL
          JMP I XBELL

          /TRAP,
          CLA CLL
          TAD ATRAP
          DCA I
          SUP
          ION
          JMP I+1
          HLT
          SINT
          BKP
          HLT
          CUP
          CAP
          JMP I PLACE
          /GO TO BEGIN

          /TEST 07
          /CONFIDENCE CHECK ON ALL EXISTENT FIELDS;
          /MAKE SURE DCA I AND TAD I ARE TO CORRECT STACK.
          /MAKE SURE JUMP IS TO CORRECT STACK,
          /CHECK ALL COMBINATIONS,
          /FIELDS WILL CONTAIN THEIR DF NUMBER IN LOG.0
          /4000
          /CON1,
          0000          CLA CLL
          7300          DCA F0NUM
          3323          DCA NUMX
          3324          TAD KCDF
          4004          1040
```

```

4005 3232 DCA CONX
4006 1110 TAD K7770
4007 3327 DCA MSAKS
4010 1110 TAD K7770
4011 3031 DCA STKS
4012 1040 TAD K00F
4013 3214 DCA I+1
4014 6201 CDF
4015 4307 JMS FILCOR
4016 2031 ISZ STKS
4017 5222 JMP I+3
4020 4252 JMS CONCHK
4021 5227 JMP CON2
4022 1045 TAD K10
4023 1214 TAD FWORD
4024 3214 DCA FWORD
4025 2324 ISZ NUMX
4026 5214 JMP FWORD

FWORD,
CON2,
CONX,
CONCHK,
RETADD,
SNA
JMP I+6
DCA XSAV

/DO ONE AT A TIME
/DO 4096 TIMES
/TEST COMPLETE
/CHECK ALL AVAILABLE STACKS
/STACKS PRESENT
/START WITH FIELD 0
/MODIFIED UNDER TEST
/RETURN HERE FROM FIELDS
/GOOD FIELD

/SET FOR MAX, 32K
/MODIFIED UNDER TEST
/ARE ALL STACKS DONE
/CHECK RESULTS
/UPDATE FIELD CHANGE
/DO ONE AT A TIME
/UPDATE FIELD CHANGE
/ARE ALL STACKS DONE
/DO 4096 TIMES
/TEST COMPLETE
/CHECK ALL AVAILABLE STACKS
/STACKS PRESENT
/START WITH FIELD 0
/MODIFIED UNDER TEST
/RETURN HERE FROM FIELDS
/GOOD FIELD

```


/INCORRECT STACK REFERENCED,
 /AC BITS 6-8 GOOD FIELD,
 /AC BITS 9-11 BAD FIELD,
 /CHECK ALL AVAILABLE STACKS,

/UPDATE FIELD CHANGE

/INSTRUCTIONS FOR FIELDS
 /MODIFIED TO DF#

4072 1263 TAD CONCH
 4073 0111 AND K0070
 4074 1112 TAD XSAV
 4075 7402 WLT
 4076 7300 CLA CLC
 4077 2031 ISZ STKS
 4100 7410 SKP I CONCHK
 4101 5632 JMP I CONCHK
 4102 1263 TAD CONCH
 4103 1045 TAD K10
 4104 3263 DCA CONCH
 4105 2324 ISZ NUMX
 4106 5263 JMP CONCH

/FILCOR, 0000
 4107 0000 TAD NUMX
 4110 1324 DCA I K0000
 4111 3537 TAD K1000
 4112 1130 DCA I K0001
 4113 3541 TAD KCIF
 4114 1041 DCA I K0002
 4115 3522 TAD JMPRET
 4116 1326 DCA I K0003
 4117 3540 TAD XRETAD
 4120 1325 DCA I K0004
 4121 3523 JMP I FILCOR
 4122 5707

/FNUM, 0000
 4123 0000 NUMX, 0000
 4124 0000 XRETAD, RETADD
 4125 4065 JMP I 4
 4126 5404 JMPRET, 0000
 4127 0000 HSTKS, 0000

[illegible]

4000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111

4200	
4300	

4400	
4500	

4600	
4700	

5000	
5100	

5200	
5300	

5400	
5500	

5600	
5700	

6000	
6100	

6200	
6300	

6400	
6500	

6600	
6700	

7000	
7100	

7200	
7300	

7400	
7500	

7600	
7700	

27 JUN 72

V141

PAL10

/PDPO=, MEMORY EXTENSION AND TIME SHARE CONTROL TEST:

ADRS	2510	DONE	2266	K0994	V141	0123	KNTR	0147
AGAIN1	0711	ENTER	1200	K0011	0120	0036	KRB	0102
AGAIN2	1005	EXFD	1316	K0017	0132	0106	KRYN	0036
ALL0	2244	EXPLD	1302	K0077	0117	0100	KXFLD	0106
ATRAP	0153	EXITY	3544	K0077	0117	1515	LBTP	1515
BEGIN	0203	F1000	3631	K0100	0126	1675	LBSTC	1675
BEGIN1	0200	PCO	0154	K1	0043	0027	LOOP	0027
BELL	1255	PDGON	3632	K10	0045	1740	MDFSHB	1740
CAA	0653	PDGO	4123	K1000	0130	2276	MGTF	2276
CAB	0754	PDNUM	4123	K1100	0142	1742	MIPSHB	1742
CAC	0755	PONRD	4014	K1200	0116	1463	MOVE	1463
CAD	0741	PILCOR	4107	K28	0103	7421	MQL	7421
CAE	1036	PILDX	1516	K3977	0144	4127	MSTKS	4127
CAP	0007	PILL	2076	K3200	0115	2043	N1	2043
CAG	1420	PRET	3630	K0000	0125	2042	N2	2042
CAI	1133	GOT00	1510	K6001	0133	0030	NDF	0030
CAX	2263	GTF	6004	K7	0044	1440	NEWDF	1440
CDP	6201	GTF1	2271	K7000	0047	0034	NOPLD	0034
CDP05	2245	HALTA	3426	K7402	0124	2200	NOMEM	2200
CHDF	1074	HLTS	0671	K7700	0121	0033	NOSTAK	0033
CHECK	2112	IB0	0343	K7707	0050	2435	NSTKS	2435
CIP	6202	IB1	0354	K7717	0056	4124	NUMX	4124
CIPCK	0753	IB2	0402	K7727	0055	0231	OK1	0231
CIPCK1	1046	IB3	0421	K7737	0054	0257	OK2	0257
CIPJMP	0723	IB4	0444	K7744	0071	0305	OK3	0305
CIPJMS	1017	IB5	0463	K7745	0145	0333	OK4	0333
CIPJPL	0715	IB6	0506	K7747	0053	0373	OK5	0373
CIPJSL	1011	IB7	0525	K7757	0092	0440	OK6	0440
CINT	6204	IBSF	0656	K7766	0067	0502	OK7	0502
CKPC	1226	IBSF1	1000	K7767	0051	0544	OK8	0544
CNSTK	2231	IFCN	1605	K7770	0110	2044	P	2044
CON1	4000	IFDF	2460	K7771	0064	0127	PLACE	0127
CON2	4027	INST	3407	K7772	0063	0065	POINT	0065
CONCH	4063	INSTA	3432	K7773	0062	2237	POS	2237
CONCHK	4052	INYE	1663	K7774	0061	2037	RANA	2037
CONX	4032	INIER	1674	K7775	0060	6214	RDF	6214
CUP	6264	IOF	6002	K7776	0057	1733	REPEAT	1733
DAT	0032	ION	6001	K7777	0046	2511	RET	2511
DATER	2047	ION1	2331	K75	0066	4065	RETADD	4065
DCAI	0001	IOY	6000	K0A1	0036	6234	RIB	6234
DF0	0211	IOY1	3403	K0A1M	0035	6224	RIF	6224
DF1	0235	IOYX	3606	KCC	6032	2452	RIG1	2452
DF2	0246	ISZ0	0021	KCDF	0040	3502	RIG2	3502
DF3	0263	JMP2	0104	KCDF1	0156	6244	RMF	6244
DF4	0274	JMP10	0020	KCIF	0041	1676	RMFCN1	1676
DF5	0311	JMP14	1702	KDATER	0157	1703	RMFDY	1703
DF6	0322	JMP1R	0134	KDFSHB	1737	1710	RMFDY1	1710
DF7	0220	JMPRET	4126	KFLD0	0105	1665	RMFE1	1665
DFCN	1677	K0000	0137	KHLT	0037	1656	RMFE2	1656
DFLO	0607	K0001	0141	KIFSHB	1741	1660	RMFI1	1660
DFN	1446	K0002	0122	KJMP	0101	1661	RMFI2	1661
DOAUTO	1517	K0003	0140	KNOP	0752	1633	RMFL1	1633

RMFL2	1621	XMEM	1701
RMFL3	1615	XNOM	2236
RMFTST	1600	XTRANS	0025
RTP	6005	XRET	0135
RTF1	2400	XREYAD	4125
RTRN	1427	XRI01	2434
SF18	1400	XRMF	0024
SINT	0254	XRYF1	2372
SKON	6000	X\$AV	0112
SPP	6040	XSDP	2304
SRGO	0143	XSR0	3633
SRO	3335	XSRTP	2407
SRI	3547	XSTKS	0023
SRG	6003	XTOP	0076
SRREY	3551	XTOF1	0077
STAN	3513	XTPLG	0022
STOF	1127	XTOR	0114
STKS	0031	XTRAP	0152
STRMP	1107	XTRMP	2550
SUP	0274	XSR0	0146
T1	2600		
T2	2627		
TAB1	0622		
TAUTO	1432		
TFLD	0630		
TFLG	2443		
TIME	0131		
TRANS	1321		
TRAP	3643		
TRPLD	1337		
TRMP	1050		
TSP	6041		
TTB	0151		
XAUTO	0026		
XBELL	0150		
XCON1	2373		
XCOUNT	0113		
XDATA	0136		
XDATER	0155		
XELL	0147		
XFD	0042		
XPDON	3576		
XFER	2000		
XFER01	2046		
XFER02	2045		
XFERIN	2032		
XFERL1	2030		
XFERL2	2017		
XFERP	1700		
XF18	0107		
XGTF1	1047		
XION1	2330		

/POBSE, MEMORY EXTENSION AND TIME SHARE CONTROL TEST; PAL10 V141 27-JUN-72 0147 PAGE 1-47

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 16 SECONDS

2K CORE USED

9,12 TEST 11

TEST SAVE FIELD WITH RMF TOT.

9,13 TEST 12

TEST AUTO-INDEX IN ALL AVAILABLE EXTENDED FIELDS.

9,14 TEST 13

DYNAMIC RMF TEST, TEST ALL SP TO OF TRANSFERS AND SP
TO IB TRANSFERS.

9,15 TEST 14

TEST NON-EXISTENT FIELDS FOR ALL O/S, IF 32K PRESENT
BYPASS TEST.

9,16 TEST 15

TEST TIME SHARE IN FIELD 0.

9,17 TEST 16

TEST TIME SHARE IN ALL AVAILABLE EXTENDED FIELDS.

10, LISTING

9.3 TEST 02

TEST DCA I AND TAD I TO ALL AVAILABLE FIELDS. EACH STACK
WILL CONTAIN ITS DF# IN LOCATION 7000.

9.4 TEST 03

TEST CIF INSTRUCTION. CHECKS THE ABILITY OF A CIF-ION=
NOP-JMP AND CIF-ION=NOP-JMS.

9.5 TEST 04

TEST GTF INSTRUCTION FOR TTY FLAG AND SAVE FIELD.
GET SAVE FIELD AFTER INTERRUPT AND CHECK INTERRUPT
INHIBIT. DO ALL COMBINATIONS 0 TO 7.

9.6 TEST 05

TEST ION AND LINK FROM RTF. TEST INTERRUPT INHIBIT BEFORE
PI. GET THE FLAGS WITH GTF.

9.7 TEST 06

TEST READ AND WRITE DATA IN ALL AVAILABLE EXTENDED FIELDS.

9.8 TEST 07

CONFIDENCE CHECK ON ALL EXISTENT FIELDS. MAKE SURE ALL
STACKS ARE ACCESSED CORRECTLY.

9.9 TEST 08

TEST DP AND IF FROM SAVE FIELD AFTER PI. USE RTF TO
SET THE FLAG AND GTF TO GET THE FLAG. CHECK INTERRUPT
INHIBIT. DO ALL 8 COMBINATIONS 0 TO 7.

9.10 TEST 09

TEST PROGRAM INTERRUPT IN ALL AVAILABLE EXTENDED FIELDS.
USE RTF, GTF, ROP, AND RIF FOR CHECK.

9.11 TEST 10

TEST INTERRUPT INHIBIT IN ALL AVAILABLE EXTENDED FIELDS.
TEST CIF-ION-JMP COMBINATION.

IF MEMORY EXTENSION ONLY, THE TIME SHARE MUST BE DISABLED AND SR0=1.

IF MEMORY EXTENSION AND TIME SHARE CONTROL, THE TIME SHARE MUST BE ENABLED AND SR0=0.

IN ALL CASES SR1=1 MUST BE USED TO STOP PROGRAM.

THE PROGRAM MUST RESIDE IN FIELD 0 ONLY.

BOTH PORTIONS OF THE TEST MUST BE RUN, 4.3.1 AND 4.3.2, TO VERIFY THAT THE TIME SHARE CAN BE DISABLED AND ENABLED.

8. MISCELLANEOUS

8.1 EXECUTION TIME

EXECUTION TIME DEPENDS ON THE AMOUNT OF AVAILABLE EXTENDED FIELDS. EXECUTION TIME FOR 32K APPROXIMATELY 3.75 MINUTES.

9. PROGRAM DESCRIPTION

THE PROGRAM EXERCISES AND TESTS ALL IOT'S ASSOCIATED WITH THE MEMORY EXTENSION AND TIME SHARE CONTROL. THE ABILITY TO RUN WITH THE TIME SHARE DISABLED, THE ABILITY TO RUN "EXECUTIVE" AND "USER MODES" IN ALL AVAILABLE FIELDS WITH THE TIME SHARE ENABLED, THE ABILITY TO REFERENCE ALL MEMORY FIELDS FROM FIELD 0 AND VICE-VERSA, THE ABILITY TO READ AND WRITE DATA IN ALL AVAILABLE FIELDS AND THE ABILITY TO RUN PROGRAM INTERRUPTS AND INTERRUPT INHIBIT IN ALL FIELDS.

THE TIME SHARE OPTION DEVELOPES A NEW MODE OF OPERATION OR THE "USER MODE". ALL HLT, OSR, AND IOT INSTRUCTIONS ARE ILLEGAL IN USER MODE AND SHOULD "TRAP OUT". THE PROGRAM WILL THEN DETERMINE IF AN ERROR CONDITION DOES EXIST. IN SOME CASES, IN TIME SHARING, AN ERROR CONDITION CANNOT BE INDICATED WITH A "HLT" OR "TYPE OUT" BECAUSE THIS WOULD BE ILLEGAL. THEREFORE A "JUMP TO SELF" IS USED TO INDICATE ERRORS.

9.1.1 TEST 00

TEST CDF AND RDF FOR ALL COMBINATIONS 0 TO 7.

9.1.2 TEST 01

TEST INTERRUPT BUFFER BITS 9-11 WITH R1B, P1 IS ENABLED AND TTY FLAG IS USED FOR INTERRUPTS. DO ALL COMBINATIONS 0 TO 7.

VERIFY THAT THE TIME SHARE IS DISABLED. ALL OTHER ERRORS AT THIS TIME WILL BE CONSIDERED AS AN ILLEGAL CONDITION. PRESS CONTINUE.

THE PROGRAM SHOULD LOOP UNTIL AN ERROR OCCURS OR UNTIL STOPPED BY THE OPERATOR WITH SR9.1. THE TTY BELL WILL SIGNAL A SUCCESSFUL TEST AT THE END OF EVERY PASS.

5. OPERATING PROCEDURE

5.1. OPERATOR ACTION

5.1.1. MEMORY EXTENSION AND TIME SHARE CONTROL

VISUALLY VERIFY THAT THE TIME SHARE DISABLE JUMPER IS "OUT" ON THE MS37 MODULE AND FOLLOW THE OPERATOR ACTION IN 4.3.1. MEMORY EXTENSION PORTION

VISUALLY VERIFY THAT THE TIME SHARE DISABLE JUMPER IS "IN" ON THE MS37 MODULE AND FOLLOW THE OPERATOR ACTION 4.3.1.

6. ERRORS

6.1. ERROR DESCRIPTION

BOTH "HALT" AND "JUMP TO SELF" ARE USED TO INDICATE ERROR CONDITIONS. IN EITHER CASE REFER TO THE PROGRAM LISTING FOR MORE INFORMATION.

6.2. ERROR RECOVERY

ALL ERRORS ENCOUNTERED MUST BE CORRECTED BEFORE PROCEEDING ON IN THE PROGRAM.

7. RESTRICTIONS

7.1. OPERATING RESTRICTIONS

PD8-E ONLY WITH THE KM8-E OPTION INSTALLED AND AT LEAST 4K OF EXTENDED MEMORY. THE NUMBER OF EXTENDED AVAILABLE FIELDS MUST BE IN SR9.11.